



# City of Edmonton Major Capital Projects Review— Final Report

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## **AUTHORS**

### **JEANNINE TSE**

Jeannine.Tse@stantec.com

### **MICAELA BROWN**

Micaela.Brown@stantec.com

### **SCOTT ARGENT**

Scott.Argent@stantec.com

### **STEVE FLECK**

Steve.Fleck@stantec.com

### **LEAH BROWN**

Leah.Brown2@stantec.com

### **TREVOR WHITON**

Trevor.Whiton@stantec.com

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# Executive Summary

In February 2023, the City of Edmonton (the “City”) engaged Stantec as part of an overarching review of its process for major capital projects. The scope of Stantec’s review was focused on two objectives:

1. Assessing the City’s project delivery method selection process for major capital projects including underlying criteria; and
2. Providing insight into industry and market trends as it relates to project delivery method selection processes.

The City’s Project Development and Delivery Model (“PDDM”) establishes a structured review process at key points in the project lifecycle to guide the development and governance of the City’s capital projects. The project delivery method selection process is part of the PDDM framework.

A key feature of the City’s project delivery method selection process is that it is not prescriptive. While the PDDM specifies that the selection process must take place, it does not mandate the use of any particular project delivery method or any specific criteria for their selection and evaluation. Instead, the process allows for the delivery method to be selected based on project-specific considerations.

Our review finds that the City’s approach to project delivery method selection is consistent with current industry practice because:

- It recognizes that there is no ‘one-size-fits-all’ when it comes to delivery models and all relevant models should be evaluated based on project-specific considerations;
- It provides City project teams with the opportunity to progressively re-validate the project delivery method as additional information becomes available through the planning process and even pivot to another delivery model if necessary; and
- It provides the City with flexibility to adapt existing delivery methods to suit its needs or adopt new delivery methods where appropriate.

From our market research, current delivery methods are trending toward approaches that favor early contractor involvement and collaboration. There is also a general recognition that a fair and balanced approach to risk allocation increases the likelihood of attracting proponents and therefore greater opportunities for competition. The City’s non-prescriptive approach enables the City to explore and adopt new and evolving delivery methods that embodies these principles.

To further strengthen this alignment with current industry practice and market conditions, we recommend that the City consider increasing the current dollar threshold for what constitutes a major capital project (from \$20M to \$100M); and the benchmark for which projects must go through initial P3 screening per Policy C555<sup>1</sup> (from \$30M to at least \$500M).

## 1. Background

The City of Edmonton (the “City”) is currently undertaking an overarching review of its process for major capital projects. The City of Edmonton defines a ‘major capital project’ to mean any capital profile having expenditure of at least \$20 million or having profiles that are highly strategic, complex, include many stakeholders, have major constraints and/or a high level of risk. As part of this review, the City has retained the University of Alberta and Stantec Consulting Ltd. (“Stantec”) under separate engagements to undertake parallel but independent reviews of this process. The University of Alberta is focused on an academic review while Stantec’s review is focused on providing an industry perspective.

The scope of Stantec’s review is focused on two objectives:

1. Assess the City’s project delivery method selection process for major capital projects including underlying criteria; and
2. Provide insight into industry and market trends as it relates to project delivery method selection processes.

Stantec has not been requested to evaluate the performance of any project, individual or supplier or the outcome of the City’s project delivery method selection process.

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<sup>1</sup> [Public Private Partnership \(P3\) \(edmonton.ca\)](https://www.edmonton.ca/public-private-partnership-p3)

## 2. Assessment of the City’s Project Delivery Method Selection Process

### 2.1 Overview of the City’s Project Delivery Method Selection Process

In April 2017, City Council adopted the Capital Project Governance Policy (Policy Number C591) to provide an overall framework to guide the development and governance of the City’s capital projects. This Policy establishes a single framework for all capital projects, across asset types and City branches. Prior to 2017 and the creation of Integrated Infrastructure Services (“IIS”), the planning and delivery of capital projects were managed by the separate City branches and departments.

Pursuant to the Capital Project Governance Policy, the City of Edmonton adopted the Project Development and Delivery Model (“PDDM”) to develop and deliver all capital projects.

The PDDM is a framework that establishes a structured review process at key points throughout the project lifecycle, as indicated in **Figure 1**.

There are five key checkpoints for all capital projects:

1. **Checkpoint 1: Authorization for Project Initiation**
2. **Checkpoint 2: Authorization for Design Expenditure**
3. **Checkpoint 3: Authorization for Capital Expenditure**
4. **Checkpoint 4: Authorization for Construction Expenditure**
5. **Checkpoint 5: Authorization for Project Closeout**

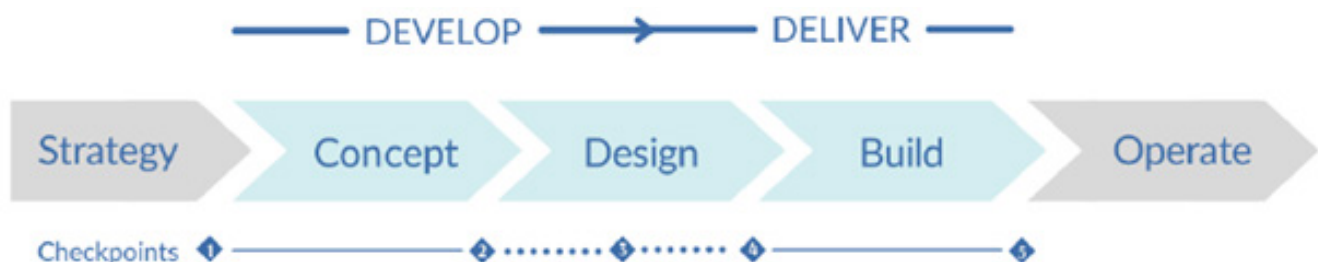
Each of these checkpoints is supported by its own set of guidelines that:

- i. identifies the steps to assess project readiness for the next project phase; and
- ii. requires sign-off by the Develop and/or Delivery Project Manager(s) (as applicable), the Review Team, and the requisite Approver.

The project delivery method selection process is part of the PDDM framework. The PDDM requires that a delivery method analysis be undertaken for each capital project. This analysis can start as early as Checkpoint 1, in which case, the analysis will continue to be reassessed and revalidated as information becomes available. The delivery method is typically finalized during Checkpoint 3 when the project has reached an appropriate level of maturity to request funding and the level of design is at a stage that will yield more reliable estimates for budgeting.

The City’s project delivery method selection process is not prescriptive in nature and does not mandate the use of any particular delivery method, nor does it establish preferred or default delivery methods. It also does not prescribe the available options for project delivery, nor does it prescribe any set criteria for evaluating delivery methods. The criteria for evaluating delivery method options are generally determined based on project-specific considerations and the evaluation of those criteria may consider both qualitative and/or quantitative factors, considering other relevant information available at the time, such as market conditions.

As part of the options for delivery methods, pursuant to the Public Private Partnership (P3) Policy (Policy Number C555) adopted in May 2010, all large scale (2010 benchmark -\$30 million), complex public infrastructure projects must go through an initial screening to evaluate whether the P3 model is a feasible delivery method for the project. This Policy does not mandate the use of the P3 model in any particular circumstance, only that it be considered as a potential option as part of initial screening.



□ Figure 1: City of Edmonton—Project Development and Delivery Model Framework

## 2.2 Assessment Methodology

Stantec's assessment of the City's project delivery method selection process is based on the following:

1. Interviews with the City's representatives for select projects. In total, 13 interviews were conducted in respect of 12 projects ranging from \$20M to \$1.1B in construction value. These projects covered a variety of delivery methods including design-bid-build (DBB), construction consultant/ general contractor (CCGC), construction management at risk (CMAR), integrated project delivery (IPD), design-build (DB) and public-private-partnership (P3);
2. Review of the business case, delivery method analysis and contract documents for certain projects as furnished by the City; and
3. Relevant City procurement and other policies located on the City's website.

A list of the projects reviewed for this assessment is outlined in **Appendix A**. The questions reviewed with the City's representatives during the interviews are outlined in **Appendix B**.

## 2.3 Key Observations

With the creation of IIS and adoption of the PDDM, a centralized approach to project development and governance was adopted. This centralized approach should provide for greater opportunities to develop consistent controls and practices, generate efficiencies and facilitate timely exchange of information and learnings among all the City's business partners. At the same time, because the PDDM approach is a framework and not prescriptive in nature, it allows for flexibility based on project-specific considerations and relevant market conditions, all in a controlled environment with multiple levels and stages of review, validation, and approval throughout the project lifecycle.

The City's project delivery method selection process itself, much like the overall PDDM approach, is not prescriptive in nature and is driven by project-specific considerations. As such, the process enables Project Managers to find the right model based on the characteristics of the project and the best information available at the time.

The summary below outlines our key observations based on our interviews with the City of Edmonton's representatives and the relevant information provided to us for review:

- **New Delivery Models.** The City is proactive in taking initiative to explore and stay abreast of evolving and new delivery methods and is open to trying them where it makes sense.

One example of this is the CCGC delivery method. It is our understanding that this CCGC model is an adaptation by the City of the CMAR delivery method. The CCGC model is intended to allow for early contractor involvement during the design phase while providing the City with cost and schedule certainty before committing to construct. Based on the interview with the Project Manager for the Coronation Recreation Centre project, this delivery method allowed for constructability input and value-engineering during the design process and more accurate cost information before going to City Council for approval.

Another example is the Edmonton EXPO Centre Rehabilitation project. This was the first time the City used the IPD model. Prior to making this decision, the City's Project Managers participated in workshops to learn about this model, its benefits and challenges, and the types of projects for which it would be suitable. Recognizing that rehabilitation projects typically present many technical challenges along the way, it was critical that these challenges were managed by the project participants in a collaborative manner where everyone has the same goal and are all accountable to each other and the project. These are the underpinnings of the IPD model and for these and other reasons, the IPD model made sense. To ensure the City received appropriate guidance through its first IPD, the City engaged a facilitator (independent from the designer and constructor) to guide and monitor the project participants' alignment with the project interests and IPD principles.

The flexibility inherent in the City's project delivery method selection process and overall PDDM framework enables the City to explore, and where appropriate adopt, evolving and/or new delivery methods based on project-specific considerations and market conditions. This reflects the City's dedication to considering lessons learned and improved practices that are continuously being communicated and developed in the design and construction industry.

- **Adapting to Changed Conditions.** The structured review process established by the PDDM approach provides the Project Manager with the opportunity to progressively re-validate the project delivery method as additional information becomes available through the project lifecycle. This, along with the flexibility inherent in the PDDM process, allows the City to pivot to a different delivery method that may be more suitable in the event that project-specific considerations or market conditions change from the time when the project was initially conceptualized, and the original delivery method selected.

One example of this is the Lewis Farms Recreation Centre project. The delivery model initially selected for this project was the CCGC method. Due to unanticipated changes to market conditions and other external factors that occurred since the initial method selection, it was determined that continuing with a lump sum bid approach (as contemplated by the CCGC method) may result in proponents including excessive risk contingencies in their pricing. In particular, under the lump sum model, if the risks for which contingencies are established do not materialize, or if the risks are not as extreme as contemplated (e.g. market escalation restabilizes), then the successful proponent may gain a windfall as they would be entitled to keep those contingencies under a lump sum compensation method and those contingencies would not be returned to the City, i.e. the City spends money for no equivalent value provided to the public. The flexibility inherent in the PDDM process and the structured review at each key milestone enabled the City to pivot to the CM approach before construction commenced, allowing the City to manage escalation risk closely with the delivery team through phased and early works packages. With the CM approach, the project can be tendered out in different components (i.e. there is competition and transparency at the subcontractor level) and these components can be tendered out at different times (e.g. just before that component is to be constructed rather than months or years ahead of the work being done), thereby reducing the need for contingencies to address market escalation.

- **Risk Mitigation Beyond the Delivery Model.** The City recognizes that while each delivery model may have certain overarching characteristics that remain constant (e.g., contractual arrangement with the Designer and the Contractor), a number of commercial considerations remain within the control of the City to define and adapt to project-specific considerations regardless of the selected delivery method. An example of this is the LRT Capital Line Project where, through market sounding, the City received various

industry feedback including that the utilities work was a significant risk that would either deter bidders from participating in the procurement or result in proponents including excessive risk contingencies that may not achieve value for money. As a result, the City removed the utility scope from the design-build project. This was in addition to other actions taken by the City to address industry feedback that was received and the example reinforces the flexibility inherent in the PDDM framework, allowing the City to adapt the risk allocation within the DB model in a manner that increases the likelihood of attracting bidders; therefore, creating market tension and ultimately reducing unnecessary risk contingencies, thereby achieving value for public money.

- **Scalability.** Based on our review of the planning deliverables made available by the City for the select projects, it is observed that the higher value projects tend to have more robust documentation. In general, it is reasonable to have a scaled approach to implementation of the PDDM process given that it applies to projects of all values and it may not make business sense to have the same level of documentation and detailed analysis for a \$2M project as a \$1.8B project. It is recommended that there be continued emphasis on appropriate record-keeping of the planning deliverables identified in Checkpoint #3, adopting a scaled approach to the level of detail and documentation based on project size and complexity. This will facilitate debrief and lessons learned at the end of the project.
- **Limitations and Future Evaluation.** It is important to note that the projects we reviewed were in various stages of completion when the PDDM was first implemented in April 2017. For some, selection of the project delivery method was already complete.

In addition, several projects are still in progress at the time of this review, so their final outcomes and performance results are not yet known. As such, the City may wish to consider revisiting this analysis in the future to consider project results and increase familiarity with the PDDM model.

# 3. Industry Insights and Market Trends

This portion of the report is focused on understanding the practices and processes adopted by other public sector owners and more generally, current industry trends as it relates to project delivery methods. It is important to highlight that this portion of the report is not based on, nor an assessment of, the City's processes, projects or representatives.

## 3.1 Assessment Methodology

This portion of the report is based on the following market research:

1. Interviews with market industry participants including, public sector owners, designers and contractors, financial advisors, insurers and construction lawyers, in respect of their general experience in the industry and not related to the City. In total, 23 interviews were conducted with 11 of these interviews being with owner participants. A list of the participants interviewed for this assessment is outlined in **Appendix C**. The questions reviewed with the participants during the interviews are outlined in **Appendix D**; and
2. Review of publicly available resources as noted in this report in respect of general market trends and select (non-City of Edmonton) projects.

## 3.2 Other Public Sector Owners' Project Delivery Method Selection Process

### 3.2.1 Delivery Method Selection Process

Most owner participants confirmed that they have processes and frameworks in place for project delivery method selection. The ultimate delivery method can often be influenced by politics and, where the project is funded (in whole or in part) by another governmental entity, it can also be influenced by that funding source's preferred delivery method.

All participants agree that there is no "one-size-fits-all" when it comes to project delivery methods and there is not a single perfect solution for all projects. In general, most participants observed that for public sector owners:

- The delivery method is typically selected during the business / concept planning stage prior to budget approval for construction; and
- The criteria underlying the selection process is generally comprised of:
  - Value for money;
  - Market conditions and market attractiveness;

- Project-specific considerations such as risks, complexity and size of project, and operational considerations (where applicable); and
- Cost and schedule.

In a few situations, the owner participants indicated that they have preferred delivery models such as design-bid-build or construction management because they have experience with these models and have generally obtained good outcomes with these models. They indicated that any proposal to use a different delivery model would be subject to detailed justification and require their Council's approval.

### 3.2.2 Market Conditions

In general, market conditions are the main (and in most instances, the sole) reason that would cause a change to the delivery method once it has been selected at the business / concept planning stage. Typically, this shift is triggered by feedback obtained through market soundings that suggest a disinterest in the selected delivery method. Market attractiveness for projects is directly influenced (or even determined) by the risk allocation expected with the proposed delivery model. This is particularly the case in current market conditions where there is a large number of both public sector and private sector owners competing for resources and the design and construction community has the option to work on less risky projects.

Many owner participants indicated that market soundings have become a significant factor in their selection of the project delivery method and, more generally, are a material consideration in their overall approach to risk allocation and commercial terms. One owner stated specifically that market sounding is a "huge" influence in their approach to project delivery. The main driver for this is the need to maximize the number of bidders to increase competition, particularly given that in the last several years, there have been multiple large procurements that have either been cancelled due to insufficient bidders or have resulted in only one bid submission. Owners recognize that neither of these scenarios serves the public's interests as they are left with the "choice" of further delaying what is typically already long overdue critical infrastructure or accepting a price that is unlikely to be competitive.

In general, for the larger projects, owners are looking to do market soundings frequently to have constant touch points and to ensure that at least one market sounding is conducted immediately before the procurement process starts to obtain real-time feedback from the industry.



One owner participant shared their recent experience with market sounding for a large-value, highly complex transportation project. They explained that the project had already been publicly announced as a provisional design-build-finance. Through their market soundings, it became clear that as market conditions (in this case, inflation) changed significantly since the time they selected the P3 model, as did the market's appetite for doing another P3. The owner participant learned that "everyone lost interest." As a result, the owner participant took steps to go back to their treasury board with a different model (in this instance, a progressive design-build model) on the basis that the market had shifted. The owner participant emphasized that they were doing market soundings in the week running up to their anticipated release of the request for qualifications to test the market's interest, describing it as a "last touch point" to assess market interest. The owner participant described the market soundings to be a "really good experience" and "something we plan on doing again."

### 3.2.3 What Constitutes a "Major" Capital Project

Most owner participants have a dollar threshold for what they consider to be a "major capital project".

For some owners, this is a single threshold across all project types, ranging from \$25M to \$200M, with most owners opting for \$100M as their current threshold (though some questioned whether the threshold needs to be increased given market inflation in the recent years). In one instance, the owner participant indicated that their process has a different threshold depending on whether it is a new/expansion project or a repair/rehabilitation project, with thresholds at \$50M and \$75M respectively.

In addition to the dollar threshold, most owner participants recognized that there are considerations other than just capital cost when it comes to determining whether a project is considered a "major capital project". For this reason, many owner participants indicated that their definition of a "major capital project" also includes factors such as complexity, risks, public interest and reputational impact, regardless of the dollar value.

There is general agreement that the threshold does not dictate the delivery model. For most public sector owners, the threshold is primarily used to determine whether the projects will be included in periodic financial reviews for their respective boards and council.

## 3.3 Market Experience with Lump Sum DBs and P3s

The market experience with lump sum design-builds and P3s is mixed. Some public sector owners indicated that they have had and continue to have successful lump sum design-builds and P3s, while others expressed dissatisfaction with these models because of mounting problems with quality, soured relationships, and disputes both during and after project completion. As observed by one owner participant, "when a design-build or design-build-finance is chosen, you would always be challenged. In this market, with supply chain and inflation issues, the market would be reluctant to enter into lump sum risk." Similarly, as it relates to P3s specifically, another participant noted that "P3 is not terribly rewarding," while another participant noted that the "number of project outcome successes through P3 have been very minimal" and that "participants in the P3s are not incentivized by project outcome."

It should be acknowledged that the success and market attractiveness of the lump sum design-build and P3 models have evolved over the past twenty or so years. The general observation is that there was a higher probability of successful outcomes for the owner and project participants on lump sum design-builds and P3s in the period between 2000-2012 as compared to these delivery models delivered in the past decade. This is not surprising given that it generally coincides with the influx of global construction and financing entities entering into the North American market to compete for these projects, leading to overly aggressive bid pricing.

Current market conditions are significantly more volatile as compared to ten to twenty years ago, particularly since the onset of the COVID-19 pandemic and other world events. As a result, the inherent "full risk transfer" approach coupled with the low-bid award criteria that is typically the underpinning of the lump sum design-build and P3 models have become increasingly financially unsustainable for the design and construction community to pursue and deliver. The unpredictability with costs and risks in today's climate makes it a gamble for designers and contractors who are, in effect, making a best guess at the time of bid and hoping that the market conditions stay generally the same during project delivery. This has led to a number of designers and contractors walking away from these delivery methods because, as observed by various participants, in the current market conditions, taking on risk is not economical.

### 3.3.1 Challenges with Lump Sum DBs and P3s

In general, most interviewed participants agree that the challenges experienced on lump sum DB projects are similar to those encountered on P3s, noting that there are a few additional challenges typically unique to the P3 models. The main reasons identified by the participants for these challenges are typically as follows:

- Construction price is fixed too early in the project lifecycle when there are still significant unknowns, including uncertainty with site conditions, design development, permitting and approvals;
- These projects typically involve a host of stakeholders (e.g., third party utility owners, permitting authorities, etc.), some of whom may operate in a “renegade” fashion because they do not report to either the owner or the design-builder and whose interests may not be aligned with those of the owner or the design-builder;
- Imbalanced risk transfer; and
- Selection criteria is heavily (if not exclusively) weighted on lowest bid.

#### 3.3.1.1 EARLY FIXED PRICE AND FIXED SCHEDULE COMMITMENT

One of the key characteristics that distinguishes the lump sum DB and P3 models from the other delivery models is that under the lump sum DB and P3 models, proponents are typically required to commit to a fixed price and schedule at the early stages of the project lifecycle when there can be significant uncertainties related to design, site conditions, permitting and other unknowns, all of which can have a material impact on the cost and schedule to complete the project. For example, fixed pricing in lump sum DB and P3 models is typically established at a time when:

- only the preliminary design is available (e.g., 15-30% complete);
- there is limited to no opportunity to meet with users, permitting authorities and other stakeholders (for example third party utility owners), all of whom can have a direct influence (and in some instances approving authority) over the final design (which can result in significant deviations from the preliminary design that forms the basis of the price proposal) and over the design-builder’s ability to adhere to the proposal schedule;
- there is limited or no opportunity to investigate site conditions and typically limited or no right to rely on the owner’s information about the project site;

- construction may not occur until 6-12 months (if not longer) after project award, which increases the risk of cost and schedule uncertainty for the design-builder as market conditions can change significantly in that period and not all trades are willing to commit to cost and schedule that far ahead of the work being undertaken.

In contrast, using the design-bid-build model, construction price is established based on 100% complete design that is approved by the owner and the permitting authority, and construction typically commences immediately upon project award.

One participant described the early fixed price commitment as “downloading, in a punitive way, risk to the builder” because of the “difficulty in trying to predict a schedule and price based on 30% design.” The design-builder in turn often attempts to transfer this risk onto their designer. As noted in Mr. David Hatem’s White Paper *“There is a dominant view that Design-Builders pursue professional liability claims against their Design Professional subconsultants as a strategy to recover Design-Builder pricing and contingency shortfalls.”*<sup>2</sup> In this regard, another participant elaborated on this risk noting that “75% of claims are differences between bid documents and issued for construction documents”. This refers to the claims advanced by the design-builder against their designer and the basis of those claims being the fact that construction pricing is based on the preliminary design and not the final design, even though in reality, that is a characteristic of the delivery model and not the fault of the designer.

In the pre-pandemic days, there were already several major industry players exiting the fixed-price design build and P3 market due to the early fixed price and schedule commitment. As noted in a November 2019 article, *“Heavyweights including Fluor Corp., Skanska USA, SNC-Lavalin Inc., AECOM and Granite Construction have piled up recent losses linked to project charges and disputes based on public disclosures, with CEOs announcing dramatic changes in bidding strategies and intentions to limit P3 participation and fixed-price contracting.”*<sup>3</sup> Market conditions have only become more volatile since the onset of the COVID-19 pandemic, which has resulted in, among other things, significant escalation and global supply chain issues, making it nearly impossible to commit to fixed price and schedule at an early stage of the project lifecycle. As observed by one participant, “cost overrun risk is a huge concern” and

<sup>2</sup> [Project-Specific Professional Liability Insurance on Design-Build and Public-Private Partnership Projects in North America: A Path Forward—American Council of Engineering Companies of Massachusetts \(acecma.org\)](#)

<sup>3</sup> [Fixing Construction’s Fixed-Price Conundrum | 2019-11-20 | Engineering News-Record \(enr.com\)](#)

as observed by another participant, the “only way to de-risk that is by pricing it in.”

Pricing at an early stage of the project lifecycle as is typically required in lump sum DB and P3 models is premature and either forces designers and contractors to exit the market or to put in significant contingencies in their price to mitigate potential risks that may never materialize. In the latter case, the taxpayers are still paying for those contingencies, with the design-builder getting a windfall if the risks do not materialize as those contingencies become their profit.

### 3.3.1.2 IMBALANCED RISK TRANSFER

It is generally recognized that the intent of the lump sum DBs and P3s is to provide the public sector owner with “cost and schedule certainty” with most (if not all) risks transferred to the private sector. One participant pointed at the COVID-19 pandemic as an example of the harshness of the lump sum DB and P3 model if the owner chooses to strictly enforce the full risk transfer model. Specifically, in most contracts for these delivery models, pandemics are considered force majeure events which typically would only entitle the design-builder to a schedule extension but not additional compensation.

Consider the situation where a design-builder submitted their fixed price and fixed schedule in February 2020 – in the ensuing period, the construction industry is subjected to significant escalation that sees the cost of materials increase by 40% if not more. In the lump sum DB and P3 model, the risk of market escalation is typically shifted to the design-builder, often with no financial contribution from the owner, even though the risk could not have been anticipated by the design-builder or properly quantified. If the design-builder’s construction price is \$100M and assuming \$65M of it is for material costs, that can mean an increase of \$26M that the design-builder needs to absorb with no contribution from the owner. Depending on the size of the company, those increased costs can create the real risk of bankrupting the design-builder.

While the market conditions 10 years ago may have been more conducive to a risk transfer model, there needs to be recognition that today’s market conditions are different and the approach to risk allocation needs to be adjusted accordingly. One participant described the continued use of the full risk transfer approach in today’s climate as “dysfunctional”. In another interview, the participant described the continued use of this approach in today’s climate as a “willfully or negligently blind” approach and that such an approach to “risk transfer is wrong.” The same participant went on to say that “doing things that are wrong costs money” referring to the increased costs incurred by owners to deal with mounting change orders, claims and disputes that seem

to be inextricably tied to these delivery models as design-builders attempt to recover from their pricing shortfalls.

It is generally recognized that if owners don’t move away from the full-risk transfer model, they won’t get bidders. In this regard, one participant explained that in the past, certain owners routinely adopted the full risk transfer approach without taking heed to the industry’s concerns but in today’s climate, the participant observed that the “market has now swung back and design builders don’t want to take on any risks.”

### 3.3.1.3 LOW BID AWARD CRITERIA

For most lump sum DBs and P3s, the evaluation criteria are heavily weighted toward price and the proponent with the lowest bid typically wins. This can be the case even if the lowest bidder’s technical proposal is non-compliant since the owner typically has the discretion to waive any non-compliance.

In a model where much if not all of the control for design and construction (and in the case of a P3, the operations and maintenance) is transferred to the private sector, the low-bid criteria often result in unintended consequences. As observed by various participants, in a lot of cases, low price upfront is not low price at the end of the project.

One of the key unintended consequences of the low bid award criteria is compromised quality. As described by one owner participant, “doing design-build has been challenging, it is not collaborative, tons of change orders, a lot of non-compliance issues.” They went on to reflect that “my learning is that design-build contractors hold no fear of design requirements, their only fear is schedule. My other learning is that you would be fighting compliance requirements and all the requirements in the RFP.”

Another participant noted that “until about 18 months ago, the default position was to listen to the accountants to find the lowest upfront price and most risk transfer. Now we’re seeing things change.” They went on to explain that owners are recognizing that the lowest upfront price is not necessarily the best solution due to their experiences with “very large claims” that have become “very public”. It was observed that owners don’t want a repeat of this.

#### 3.3.1.3.1 Compromised Quality, Durability and/or Reliability

One unintended consequence of the low bid criteria is that the quality, durability and reliability of the infrastructure may be sacrificed. This should be of particular concern for public sector owners who rely on the infrastructure to be robust and to serve their communities for multiple decades.

As indicated by one owner participant, “When the lowest bid is selected, the project team is already set up for design and cost challenges.” They went on to say that “from my experience, the better design has not been the winning one.” An analogy used by various participants is –if an individual is buying a house, they consider the options based on their requirements, all within the range of what they can afford – from there, they pick the house that best suits their needs, which is not necessarily the cheapest house nor the house that is within their initial budget.

The reality is that when the design-builder has committed to a fixed price to design and construct the project, they are motivated to actively seek opportunities to cut down on costs and to provide the bare minimum to finish the project. The owner’s ability to control that behavior is only through strict enforcement of the project statement of requirements, but that may not be sufficient to secure an infrastructure that meets the user’s operational needs or that meets the intended purpose of the infrastructure. This strict enforcement of contract terms can also result in additional unintended consequences such as the contractor abandoning the project or going bankrupt.

The low-bid criteria often create the inevitable situation where there may be multiple layers of competing interests, including:

- the owner’s interest is to obtain an infrastructure that is fully compliant with their statement of requirements and meets its intended purpose;
- the user’s interest is to obtain infrastructure that meets their operational needs; and
- the design-builder’s interest is to finish the project as quickly and cheaply as possible.

For example, the owner prescribes their technical requirements for the mechanical system for a new hospital. The design-builder decides to procure the system from supplier A instead of supplier B because supplier A has a better price for it. It may be that the hospital staff is familiar with supplier B’s system, whereas they are unfamiliar with, and would require significant training to operate, supplier A’s system and supplier A does not provide any local support for technical issues. In this scenario, the owner loses the ability to control which equipment is selected, so long as the equipment meets the bare minimum technical

requirements of the contract. As observed by one owner participant, “decision makers and users are not the same which can make design complex”. Inevitably, project quality, durability and reliability are at higher risk of being sacrificed as design-builders seek to maximize their profit margin.

Some proponents of the P3 model have attempted to address concerns about reduced quality, durability and reliability of the infrastructure by employing P3 models that obligate the private sector to also operate and/or maintain the infrastructure. They suggest that in these P3 models, the overall consortium is incentivized to deliver a robust infrastructure since the operations and/or maintenance service provider is involved for several decades after construction completion. As observed by one participant, this fails to take into consideration the reality that for most P3 projects, the “composition of the operations has little connection to the build,” referring to the design-builder entity versus the operator entity. It was further observed that there is “little integration of the operations and maintenance party to make the [design-build to operations-maintenance] transition seamless – the contractor and operations and maintenance provider have different cost interests.” As an example, the design-builder may be incentivized to source a mechanical equipment that is cheaper to purchase, but the same mechanical equipment may be less efficient and cost more for the operator to operate.

### 3.3.1.3.2 Change Orders, Claims and Disputes

Another unintended consequence of the low bid award criteria is that the design-builder is inevitably motivated to offset their low bid (or to maximize their profit margin) through change order requests, claims and disputes as against the owner and other project participants (e.g., their designer as described earlier). Below are a few examples:

- Example #1: For the Maryland Department of Transportation MTA Purple Line P3 Project, it was reported as follows:
  - *“The Design-Build cost to complete the Purple Line construction has increased by \$1.4 billion from \$2 billion to \$3.4 billion...The project, which originally was scheduled to be complete in March 2022, will be open for service for Marylanders in Fall 2026.”<sup>4</sup>*

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<sup>4</sup> [BOARD OF PUBLIC WORKS APPROVES PURPLE LINE P3 AGREEMENT MODIFICATION WITH NEW DESIGN-BUILD TEAM | Maryland Transit Administration](#)

<sup>5</sup> [Fluor/Lane/Traylor Bros. JV quits Baltimore Purple Line project over \\$800M in overruns | Roads and Bridges \(roadsbridges.com\)](#)

<sup>6</sup> [Purple Line will cost billions more than planned, open 4.5 years late : NPR](#)

<sup>7</sup> <https://www.orlandosentinel.com/2021/01/22/state-rebuffs-i-4-builders-newest-ask-for-millions-in-cash-but-more-claims-potentially-ahead>

<sup>8</sup> <https://www.wesh.com/article/1500-claims-at-least-30-lawsuits-filed-against-sgl-during-i-4-ultimate-construction/38224934>

- *"The joint venture consisting of Fluor Corp., Traylor Bros., and Lane Construction has terminated its work on the \$5.6 billion Purple Line rail project in Baltimore, Maryland, as a result of disputes with the state of Maryland over what its claims is \$800 million in delay related cost overruns."*<sup>5</sup>
- *"Maryland paid \$250 million to settle with the companies."*<sup>6</sup>
- Example #2: For the FDOT I-4 Ultimate Improvement P3 Project, it was reported as follows:
  - *"The \$378 million claim earlier this year from I-4 Mobility Partners is in addition to a claim of \$346 million filed by the builder in 2018.... That claim was settled last year when the Florida Department of Transportation agreed to pay the builder an extra \$125 million and to allow an additional year of construction work."*<sup>7</sup>
  - *"Through August of this year, more than 1,500 claims have been filed. SGL has paid more than \$290,000 on 276 of those claims. That means 82% of those claims have been denied."*<sup>8</sup>

The above are but a few public examples of the claims and disputes that arise between owners and design-builders. This does not event factor in the claims and disputes that arise between the design-builders and their designers and subcontractors. It is noteworthy that for most projects, the claims and disputes are settled out of court and as such, the number of actual claims and disputes and the associated dollar values are not readily accessible information.

While claims and disputes are not new to the construction industry and claims and disputes can arise in all delivery models (even on IPDs and Alliance models), it bears highlighting that most (if not all) lump sum design-build and P3 models are sold as providing "cost and schedule certainty". The above examples and others in the market cast significant doubt as to whether these models can be consistently delivered as promised.

One takeaway is that owner budgets should not be exclusively tied to the upfront design-build contract price but should also factor in the inevitable costs associated with disputing (and potential payout of) change order requests and claims. As noted by one participant, "Owners are looking seriously into the end result vs. what gets presented to taxpayers as the first price". It is possible that owners have already been factoring in the "costs of claims" when developing their original budget and still consider it to be a justifiable cost; however, owners should not discount the long-term reputational damage resulting from concerns (whether perceived or actual) related to compromised quality, durability or reliability with their infrastructure or the real risk of

taxpayers having to pay for drawn out disputes with the design-builder.

### 3.3.2 Project Success Influenced by Project Size and Type

As noted earlier in this report, there is no "one-size-fits-all" when it comes to delivery models, and owners have experienced and continue to experience success with lump sum design-build models in certain situations. Not surprisingly, whether a project is delivered successfully depends on the type, size and complexity of the project, the commercial arrangement and approach to risk allocation and most importantly, the relationship among the parties involved in delivering the project.

Based on our interviews, public resources and our own experience, the factors below have a great influence on the outcome of projects delivered using the lump sum design-build or P3 model:

- **Project Type**—social infrastructure and vertical infrastructure generally (for example, hospitals, schools and other buildings) are perceived to have better outcomes (in terms of fewer instances of schedule delay and claims and disputes) than horizontal infrastructure (for example, roads, bridges and transit projects). Several interviewed participants attributed this to the fact that there is a "ringfence" around vertical infrastructure – meaning that vertical infrastructure is typically confined to a much smaller geographic area as compared to horizontal infrastructure, which can span many miles and cross multiple jurisdictions/ municipalities. For horizontal infrastructure, it is observed that there are increased risks associated with unanticipated site conditions, third-party utilities, and permitting processes. This creates greater uncertainty on horizontal infrastructure from a cost and schedule perspective as compared to vertical infrastructure.
- **Project Value**—it was observed that the rate of success for design-builds tends to fall off when projects are larger than \$500M in capital value. This is not surprising as projects of greater value typically mean longer schedule, greater complexity, bigger footprint (whether horizontal or vertical) and therefore increased risk of cost uncertainty, including as it relates to escalation.
- **Project Scope Definition**—a well-defined project scope is critical to align expectations between the owner and the design-builder on lump sum DB and P3 projects. It was further indicated that lump sum design-builder projects have a greater likelihood of success where the project scopes have been "tested" and previously executed by the same design-build team for the same

owner to mitigate the risk of any ambiguities in interpretation of the project requirements or misalignment with the owner's requirements. The rationale is simple—for lump sum DBs and P3s where the lowest bid typically wins, it only makes sense for the owner to define the required project outcome rather than rely on the consortium of private sector companies (who can be motivated by self-interests and their profit margins) to decide what the owner (and the public) will receive by way of infrastructure at the end of the project.

In summary, the lump sum DB model can still be suitable for projects that are lower value, simple with well-defined scopes and a balanced risk allocation (for example, where the owner retains risks associated with utilities work and unknown site conditions). This is because these conditions allow project costs and schedules to be developed with better accuracy. In contrast, projects that are higher value, complex, not well-defined and/or prone to many competing interests (e.g., multiple stakeholders) or unknowns are not typically suitable for lump sum DB or P3. These projects have inherently greater price and schedule uncertainty and a higher risk of unintended negative consequences to the asset.

### 3.4 Current Market Trends

Most participants indicated that it would be difficult for public sector owners to continue with the lump sum design-build and/or P3 models in today's climate because design-builders are no longer willing to take on the risk transfer typically inherent in these delivery models. As observed by one owner participant, "all in all, the market has been clear it is not likely to accept the same level of risk transfer as we've seen in the past."

One participant observed that in today's climate, public sector owners are in a situation where they need to and want to show consideration for delivery methods other than lump sum design-build and P3s. As noted earlier, this is not to say that lump sum design-builds have no place in the market; however, as most participants observed, there is a limited scope of projects that make sense for these delivery models and even in those cases, there needs to be a rebalancing of the approach to risk allocation.

There was a general recognition that the current market trends involve two key characteristics:

1. Early contractor involvement ("ECI"); and
2. Collaborative models

As observed by one owner participant: "we have noticed two themes in recent years – more risk sharing is emerging and finding clever opportunities for early contractor involvement." This has resulted in most owners shifting towards the progressive design-build ("PDB"), integrated project delivery ("IPD") or alliance models.

It should be noted that ECI is not a delivery model; rather, it refers to the early engagement of the contractor during the project lifecycle, e.g., once concept design is available. There are various delivery models that provide for ECI, including progressive design-build, IPD, alliance and construction management projects. One of the key benefits with ECI is that it can provide the owner with a more accurate budget estimate at an earlier stage of the project lifecycle, thereby offering more cost certainty before the owner requests Council approval for the project. Early cost estimating also provides the owner with the opportunity to make major programmatic changes early in the design process to align with potential budgetary constraints, thereby reducing the risk of late redesign and resultant schedule impacts. Early contractor involvement also provides both the owner and the designer with input on constructability and construction scheduling and sequencing that can be material in understanding how to package the construction work and the overall project schedule.

As it relates to collaborative models, this generally describes the approach to integration and risk allocation among the owner, designer and contractor. This collaboration can be achieved through a variety of different delivery models, including PDB, IPD and Alliance. As the design and construction industry becomes increasingly reluctant to accept full risk transfer, it is natural that owners are looking for alternate approaches to risk allocation that is focused more on risk sharing among the owner, designer and contractor as a measure to attract bidders.

Regardless of the delivery method ultimately chosen, the recurring theme is that the underlying approach to risk allocation needs to be fair and appropriate. This does not mean full risk transfer. To the contrary, it is acknowledged that an appropriate approach to risk management requires the owner to retain certain risks so that they can directly control and manage those risks in the interest of the project and the public, rather than being at the mercy of the private sector to deal with those risks. In today's market, it is generally recognized that the key risks that should be maintained by the owner include:

- interface among stakeholders (e.g. owner retains designer and constructor separately to ensure it has

the direct ability to select the designer itself and has direct control over the design process; owner splits up a mega-sized project into multiple projects to allow for more competition and owner retains control and management of interface among the different projects; etc.);

- site conditions (e.g., ground and subsurface conditions and third-party utilities; etc.);
- market conditions (e.g., escalation);
- permitting process (e.g., owner is responsible for procuring permits from authorities having jurisdiction, etc.).

Related to the approach to risk allocation is what happens if the risks materialize. While we have traditionally seen, and continue to see, owners use “disincentives” to “penalize” the service provider for non-conformance (e.g. delay liquidated damages), we are currently seeing a trend towards public sector owners including *incentives* in the contract (e.g. bonus for early or on-time schedule completion) and not just disincentives. One owner participant commented that the market performs better through incentives and that sometimes “carrots work better than sticks”.

The below provides an overview of the key delivery methods that are “in trend” in today’s market conditions:

### PROGRESSIVE DESIGN-BUILD

As noted by one participant, there is “a lot of optimism in the progressive design-build model, although implementation and terminology across owners varies pretty significantly.”

In general, progressive design-builds are typically structured as follows:

- **Two-Stage Project**
  - Phase 1 for Design & Preconstruction Services—Typically during Phase 1, the design-builder undertakes site investigations, collaborates with the owner and other stakeholders to develop a design to approximately 60% - 90% completion, and submits a price proposal to the owner for the completion of Phase 2 Construction. In some instances, the design advances to 100% completion before a price proposal is required to be submitted to the owner. In most (if not all) instances, the owner is entitled to reject the price proposal and exercise a range of options (often referred to as “off-ramp”), including having the design-builder complete the design and the owner can use that design to return to the market to tender the design in a competition.

- Phase 2 for Construction—Typically during Phase 2, the design-builder completes the design and undertakes construction of the project. This is typically done as either a guaranteed maximum price or a fixed price.

- **Procurement**—the procurement can be a one-step (request for proposals only) or two-step process (request for qualifications followed by request for proposals). There is typically no requirement for proponents to commit to the construction cost or overall project schedule or to prepare any preliminary design. Pricing submission is typically limited to the provision of hourly rates, markup for the design-builder’s general conditions and fee for construction management and pricing (either lump sum or a not-to-exceed price) for Phase 1 of the Project.

The progressive design-build model is intended to mitigate some of the key risks inherent in the lump sum design-build model. For example,

Lump Sum Design-Build	Progressive Design-Build
Construction price typically established based on preliminary design (e.g., 15-30% design)	Construction price typically established based on 60% - 90% design (sometimes 100% design)
Construction price typically established before full site investigation	Construction price typically established after site investigation
Construction price typically established before opportunity to meet with users and stakeholders	Construction price typically established before opportunity to meet with users and stakeholders
Procurement costs and time are high as proponent teams expend costs to develop preliminary design and owners expend costs to develop indicative design for inclusion in the request for proposal	Procurement costs and time are typically streamlined as proponent teams don’t have to develop preliminary design and owner does not have to include indicative design

It is noteworthy that there is no real “standard” approach to progressive design-build model. While the above describes what is often seen as the “typical” approach, we are seeing variations (sometimes significant variations) from one owner to another in terms of their respective approach to progressive design-build. For example, some owners opt to have Phase 1 end at 100% design completion rather than 60% design completion.

One owner participant noted that having a credible offramp at the end of Phase 1 is essential to make the

delivery model work. The owner participant emphasized that owners need to be prepared to take the work at the end of Phase 1 and move on without the design-builder.

One contractor participant spoke highly of the modified design-build approach adopted by Department of National Defence and Defence Construction Canada emphasizing that this model provides for an open and collaborative process for all stakeholders to properly identify and evaluate risks and to make decisions together. For example, they described the design development process which is undertaken collaboratively among the stakeholders with a combined sign-off by the owner and the design-builder at the end of the design development process.

While there is a lot of optimism about the progressive design-build model, as observed by one participant “we are in the early days for progressive design-build.” At its core, the progressive design-build model still has much of the same structure and underpinnings of a lump sum design-build model. As one participant noted, depending on how the progressive design-build model is set up, it is a close cousin of the lump sum design-build model, just with a different name. Owners should be cautious to avoid using the “progressive design-build” title to attract bidders but still adopt an imbalanced risk transfer approach in the underlying contract (e.g., shifting the risk of design-to-budget or design iterations to the design-build team without correspondence fee adjustments). There remains a need to have a balanced risk allocation in the contract and for all parties to maintain a collaborative mindset and approach to each other and the contract. One owner participant commented that there is a real risk where owners are selecting the progressive design-build model because it is trending, without consideration of the disadvantages. The same owner participant compared this to the prior P3 trend, warning against repeating the same misstep with selecting models based on the “buzz”.

## INTEGRATED PROJECT DELIVERY AND ALLIANCE

While IPDs and alliance models are strictly speaking different models, they share many of the same features, as follows:

- One single agreement among the owner, designer and the constructor;
- Collaborative management where decision is typically by consensus among the owner, designer and constructor;
- Designer and constructor are compensated “at cost” (without profit and in the case of alliance models, without corporate overhead and without profit) on a time and material basis;

- No cap on the costs to design and construct the project, except that the designer and constructor put their profit (and in the case of alliance models, their profit and corporate overhead) at risk to fund certain project costs in the event actual costs of the project exceed the mutually agreed upon target cost;
- All claims and disputes among the parties are waived, except for certain “bad acts”;
- Open book process for design and construction cost development.

Based on our interviews, there remains a general hesitation by owners and the construction community when it comes to the IPD and Alliance models.

For the construction community, it was indicated that there is a bit of fear with alliance methods and IPD because of the requirement to open their financial records.

For the owner participants, one owner participant indicated that they are not necessarily going with IPD or alliance. Another owner participant noted that alliance is a huge learning curve and explained that they decided against using the alliance model for one of their high dollar value, complex projects that is in procurement because 1) that project is not a learning curve type of project; 2) the alliance model has a very involved procurement process that is expensive; and 3) the governance side of Alliance does not make sense.

Similar to the progressive design-build model, while there is a lot of optimism about IPDs and alliance models because of the promise of collaboration and shared risks, for the most part, the North American experience with these models is still in its infancy. There is not enough data at this stage to comment on whether these are ‘successful’ delivery models. In evaluating whether a project is suitable to be delivered using one of these collaborative models, it is critical for owners to recognize that:

- These models demand significant effort from owner staff on a daily basis; this is not simply a role where owners are monitoring, managing or providing oversight from time-to-time but owners are involved on a day-to-day basis in making every decision on these projects;
- Related to the above, owners should ensure that their governance structure empowers their project staff to make decisions at the project-team level, with limited instances where escalated approvals (e.g. Council approval) are required;
- These models require the owner to relinquish full control because decisions are generally made by consensus among the owner, designer and constructor.



Ultimately, these models require a significant shift in mindset and approach for all project participants and it is critical for all parties to maintain a collaborative mindset and approach to each other and the contract.

### CONSTRUCTION MANAGEMENT AT RISK & CONSTRUCTION MANAGER/GENERAL CONTRACTOR

One owner participant indicated that they have moved away from design-bid-build to construction management in recent years because of the collaborative early contractor involvement.

Under both CMAR and CM/GC models:

- the contractor is engaged early in the project lifecycle to provide schedule, budget and constructability advice during project planning and design;
- the owner holds the contract with the designer and therefore retains control over the design;
- construction cost is developed through an open book process;
- under the CMAR, the construction cost will be fixed at some point in the project lifecycle.

Speaking about their experience with the CMAR model, one owner participant indicated that:

- the feedback they have received so far on the CMAR model is good and that they are getting more interest with this type of delivery than design-bid-build procurement;
- the learning they've offered is to get the contractor involved at an earlier stage of the project lifecycle as contractors feel it's more of a relationship where they can have those tough conversations;
- they noted that for their CMAR projects, the construction price is ultimately fixed at some point but they do give some leeway in when fixed price commitments are established given recent delays in getting building permits, supply chain-related issues, finalizing design and schedule certainty;
- while evaluation criteria for contractor selection does include consideration of the contractor's overhead and profit percentage, the ultimate award for their CMAR projects is weighted based on experience and relationship more so than on price, indicating that predictability in cost and schedule is more important than value for money.

### DESIGN-BID-BUILD

Several owner participants remain of the view that the design-bid-build is the ideal delivery method, indicating

that the large majority of their projects are delivered using this model. One of these owner participants noted that more than 98% of their infrastructure projects are delivered using the design-bid-build model as it gives them cost certainty, control and appropriate risk management. This includes projects valued at several hundred million dollars.

As it relates to cost certainty, the owner participant noted that they use stage gates to monitor project costs and they have the ability to validate and scrutinize costs and scope creep because they maintain control over the design process, which they cannot do in a design-build and like models.

Regarding risk management, the owner participant was of the view that the public sector client always retains risks because there is no model that transfers the risk of accountability. Their view is that the risk of accountability is better managed through the traditional design-bid-build model because it gives them control. This owner participant noted that they have past experiences with models involving early contractor involvement but ultimately, they reverted back to using the design-bid-build model. They indicated that where they see value in having early input from the contractor, they find opportunities to engage them to provide this service without having to adopt a different delivery method.

### PROGRAM MANAGEMENT

Recognizing that owners may not always have enough resources or the requisite expertise internally to manage large value or complex projects, one participant advocated for a "programmatic approach," noting that "program managing design-bid-build packages makes so much sense given the market conditions." With this delivery approach, the owner hires a program management firm who represents the owner to manage several related projects, including the provision of planning, implementation, management, operational readiness, and controls solutions to the owner.

In a recent meeting with a public sector owner from the US, they indicated that they delivered their \$1.7B program using the design-bid-build method. The program was divided into approximately 17 projects of varying size, with the public sector owner maintaining the role of interface manager among the multiple designers and contractors. They received only one claim on the program and had suggested that the claim was more to do with the particular contractor individuals than the delivery method or risk allocation adopted for the program. Overall, the owner considered the project to be a success and found that the delivery method enabled

them to maintain control over design and schedule. They emphasized the importance of planning and pre-design to support the planning process.

### Market Tension

Some owners have questioned whether the progressive design-build and construction management models provide for adequate competition. In general, owner participants who have experience with these delivery methods indicated that it's about trade-offs, indicating that what you may lose in competition, you can gain in more information.

Most owners recognize that the open-book process associated with these models provides the owner with the opportunity to understand how the contractor is establishing contingencies and identifying and quantifying risks, whereas there is typically limited to no opportunity to have transparency into how the contractor develops contingency in a lump sum design-build or P3 model.

### 3.5 Value for Money

Historically, the notion of “value for money” has often been interpreted as lowest price for full risk transfer and has been used to justify lump sum DB and P3 models as they are sold as full-risk transfer to the lowest price bidder. There is now a growing awareness among owners that full-risk transfer in a low bid environment is a recipe for soured relationships and ongoing claims and disputes and rarely results in “best value for public money.”

The notion of “value of money” needs to evolve to consider non-cost factors, such as project outcome and public interest, both of which should be paramount to costs. In this regard, it was indicated at various interviews that in some procurements, the owner retains the discretion to consider award to a proponent other than the lowest priced proponent; however, it did not appear that this discretion is routinely exercised by the owner (if at all).

There is also a growing awareness that in today's market, most if not all bidders are including significant contingencies in their price (notwithstanding a low bid environment) in an effort to mitigate potential and perceived risks. While there is a general recognition that for lump sum DB and P3 projects, the owner is paying an upfront premium to the design-builder for the risk transfer contemplated in those delivery models, the question raised by several owner participants is “are you getting value for money?”

In one interview, the owner participant stated that with design-build, the risk is transferred to the contractor and the owner understands that they pay upfront for those risk premiums for the promise of cost certainty. However, speaking about today's market conditions, the owner participant indicated that what they are seeing now is that those risk premiums embedded in the contracts are significant and they question whether it is a fair premium and something they want to pay for. The owner participant recognized that with the design-build model, the risk might never materialize but they are paying for it anyway. They indicated that they are now considering other mechanisms to use these risk premiums, including a different contract altogether, maybe progressive design-build or different applications of CM/GC, so they aren't buying those risk premiums.

### 3.6 Ottawa Light Rail Transit Public Inquiry<sup>9</sup>

The Ottawa Light Rail Transit Public Inquiry (the “Inquiry”) has been widely discussed in the industry in the past year and was referred to by many participants involved in our market research. Based on the interviews conducted for this assignment and our general experience, our assessment is that most (if not all) current market trends are either the result of or consistent with the findings and recommendations of the Inquiry. It is therefore important that we provide a summary overview of the context for this Inquiry and the ultimate findings and recommendations. It should be noted that while the Inquiry is not an assessment of the City's projects, it offers observations and recommendations that are pertinent to public sector owners and their approach to project planning and delivery.

By way of context, in November 2022, due to concerns raised about the Ottawa Light Rail Transit System Stage 1 (OLRT1), the Ontario government established the Commission of Public Inquiry to investigate the circumstances that led to these problems. These problems ranged from late delivery of the project (by approximately 16 months) to ensuing multi-year multi-million-dollar disputes between the public and private sectors (at the expense of taxpayers) and regular issues affecting the system's reliability.

The OLRT1 was delivered using the P3 model. While the Commissioner acknowledged that the P3 model was successful in saving the public sector approximately \$100M because it transferred geotechnical risk to the private sector, the Commissioner also warned of

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<sup>9</sup> [http://www.archives.gov.on.ca/en/e\\_records/OLRTPI/documents/final-report/index.html](http://www.archives.gov.on.ca/en/e_records/OLRTPI/documents/final-report/index.html)

Please note: All quotations within Section 3.6 are a direct excerpt from the Ottawa Light Rail Transit Public Inquiry—Final Report.

problems and unintended consequences resulting from characteristics inherent in the P3 model, including the following:

- Transfer of risks from the public sector to the private sector is typically the underpinning of P3 models; however, *“the risk transfer comes at a significant cost, as the private sector charges premiums to accept risks”*
- The public sector loses direct involvement in, control over, and transparency into the project as *“the government entity is effectively handing the day-to-day control of the project to the private partner.”* In this regard, the public sector often relegates itself to the role of contract administrator, *“seeking to enforce its rights and the private consortium’s obligations”*
- Since control is handed over to the private sector and they are always driven to maximize their profit, this can lead to unintended consequences that are *“fiscally efficient solutions that do not serve the public’s interest in the asset”*
- The public sector never truly “transfers risks” because *“[o]n high-profile projects, even when responsibility and risks are transferred contractually to the private sector, governments will often be held responsible in the public eye for delays or service that falls below expected standards”*
- The relationship between the public and private sectors deteriorating is a risk inherent in the P3 model, *“which can drive parties to assert their contractual rights when significant problems develop on a long-term project”*

Below are some of the key learnings and takeaways that are applicable to all public sector owners and their approach to procurement, risk allocation and overall project planning and delivery:

- **No Single Delivery Method.** The Commissioner warns against starting projects *“with the mindset that there is only one acceptable delivery model”* and instead, recommends that owners *“critically analyze the full range of delivery model options using objective criteria appropriate to the project’s circumstances and the public procurer’s various priorities.”*
- **Delivery Method Selection Process.** The Commissioner noted that on the OLRT1 project, the public sector owner had retained a third-party consultant to undertake a value for money assessment prior to selecting the P3 model. In this regard, the Commissioner was critical of that assessment for not fully considering the disadvantages associated with the P3 model for the OLRT1 project. The Commissioner acknowledged that the public sector needs to prioritize cost and schedule

certainty and risk transfer but warned against putting too much weight to these two considerations in assessing delivery methods and that owners must not lose sight of cooperation, flexibility and other considerations which are required for successful project delivery.

The Commissioner emphasized that there is no one-size-fits-all model and advocates for the government to *“avoid tunnel vision and consider objective criteria to select the best model. These criteria include not only cost and schedule, but also aligning the interests of the parties, government control, flexibility to extend or alter, and above all, the public interest.”* A copy of the objective criteria for evaluation as proposed by the Commissioner is found in **Appendix E.**

- **Affordability Caps.** The Commissioner found that the budget for the OLRT1 was developed based on preliminary functional design elements, prior to the completion of more detailed engineering designs, and therefore a very preliminary estimate. It was determined that this estimate became the subject of campaign promises for an “on time and on budget” project and staff was directed to adopt a “design to budget” approach. The Commissioner suggests that a budget can only be appropriately established after more comprehensive design and engineering work is completed, and the focus should be on responsible cost containment measures. In this regard, the Commissioner warned that *“care must be taken to ensure that cost containment measures do not outweigh considerations of quality”*
- **Collaboration.** The Commissioner advocates for a mindset based in true collaboration. They warn against (1) structuring relationships *“in a manner that creates a zero-sum game whereby one party bears all the risk and “loses” if that risk materializes. A true partnership may be more effective”* and (2) parties *“insisting on strict adherence to the project agreement regardless of project developments and challenges”.*

The Commissioner advocates that, *“[r]egardless of the project delivery model chosen, collaboration should be at the heart of the relationship between the public entity and private-sector partner(s).”* In this regard, the Commissioner emphasized that regardless of the delivery method chosen by the government, the government always has the option of taking a co-operative approach with the designer and contractor, working cohesively together to complete the project for the benefit of the public. For example, on the OLRT1 project, it was noted that the private sector did not have sufficient maintenance resources, but the government contributed to this problem *“by filing*



hundreds of work orders in the first weeks of operation, many of which were categorized as urgent, to respond to minor issues that would have been largely resolved through regular maintenance.” The government could have alleviated the private sector’s resource challenge by limiting its requests to only those that are urgent, rather than inundating the developer with minor issues.

- **Optimism Bias.** The Commissioner spoke at length about, and cautioned against, optimism bias. This “refers to the risk that the parties are overly optimistic at the start of a project and set the budget, schedule, and contract terms accordingly.” The Commissioner noted that on the OLRT1 project, “[o]ptimism bias [wa]s exacerbated by inexperience, because a lack of experience increases the likelihood of misjudging the participants’ ability to overcome obstacles and meet project goals.” To mitigate the risk of optimism bias, owners should ensure they have appropriate internal resources with the right skills and capabilities to lead and manage projects and the evaluation criteria for project award should consider the proponent’s experience and qualifications, not just costs.
- **Resources.** The Commissioner recommended that the Province of Ontario “investigate how to develop the skills and capabilities at the municipal level required to lead large infrastructure projects.” This includes creating a training program to improve project

management skills, creating career paths for managing complex infrastructure projects and ensuring that municipalities undertaking complex infrastructure projects have ongoing access to expert advice and guidance throughout the project.

- **Disinterest in P3.** Similar to the observations made by the market participants, the Commissioner noted that “...the assumption of risk required in P3 models is causing some major construction companies to decline to participate in P3 projects... Thus, while the City was able to transfer risk in this case, it may not be able to do so in the future or the cost to do so may be significantly higher.” The Commissioner further comments that “P3 contracts of the size and duration of the OLRT1 are increasingly uncommon. Other major infrastructure projects in Ontario have been broken into smaller contracts and run over shorter periods (with the possibility of extension). In other jurisdictions, a different model is used.”
- **Public Interest & Transparency.** The Commissioner concludes that “...as an overarching consideration, a public agency must prioritize the protection of the public interest. The public has the right to safe, reliable infrastructure and to receive regular and honest communications from the government regarding its construction status and operations.”

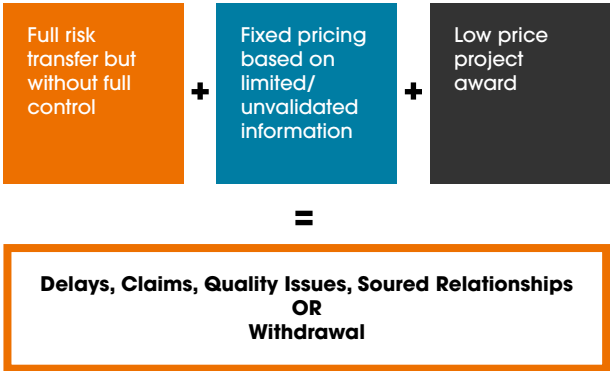
# 4. Key Observations

This portion of the report is focused on understanding the practices and processes adopted by other public sector owners and more generally, current industry trends as it relates to project delivery methods. It is important to highlight that this portion of the report is not based on, nor an assessment of, the City’s processes, projects or representatives.

## 4.1 Risk Allocation

The “full risk transfer” approach coupled with fixed pricing and lowest-bid award criteria, regardless of delivery method, is not sustainable and often leads to unintended consequences such as claims and disputes and compromised quality, as discussed earlier in this report. Further, because of the abundant amount of construction work currently available, public-sector owners are having to compete with each other and with private sector clients for design and construction resources. There is a strong awareness that designers and contractors have the choice to walk away from projects with undue risk allocation.

The math is simple:



As noted in the article titled Allocation of Risk in Construction Contracts, “While there may be a temptation to allocate all or most major risks to the contractor, this must be tempered by an understanding of the potentially adverse consequences of allocating risk where doing so may preclude the submission of bids or result in an increase in cost such that the project is no longer financially viable. Improper risk allocation may also result in prolongation of construction completion times, wastage of resources and/or increased likelihood of disputes.”<sup>10</sup> In the same article, the authors further noted that “[a] contract which balances the risks fairly between a contractor and an employer will generally, in the absence of bad faith, lead to a reasonable price, qualitative performance and the minimization of disputes.”

The key takeaways are:

- The idea of full risk transfer is a fallacy. Public sector owners need to recognize that they ultimately own all the risks as they are the ones that the public holds accountable for project outcomes. Whether the project is late, over budget or the contractor goes bankrupt or otherwise abandons the project, the government remains responsible to complete the project for its taxpayers.
- Regardless of the delivery method, the owner has ultimate control over which risks it retains and which risks to transfer to other parties. For example, one of the participants noted that the unanticipated number of utility relocations had resulted in the long-delayed completion of a transit P3 project in eastern Canada. As a result of that experience, the project owner has since changed its approach to managing the risk by specifying the number of utilities and entitling the contractor to a change order for any changes to the number of utilities.
- As discussed earlier, regardless of the delivery method ultimately chosen the underlying approach to risk allocation needs to be fair and appropriate. Owners need to recognize that for certain risks, they are better positioned to manage and control those risks in a manner that is aligned with the interest of the project and the public.

<sup>10</sup> Allocation of Risk in Construction Contracts | White & Case LLP (whitecase.com)

## 4.2 Disinterest in Lump Sum Design-Build and P3 Models

The decline in market interest in the lump sum design-build and P3 models has been brewing for years. As observed at two Association of Consulting Engineering Companies (ACEC)<sup>11</sup> panel associations in 2019<sup>12</sup>, “firms such as SNC-Lavalin, Skanska and Granite Construction are withdrawing from the sector” and “multiple insurers are also backing off and private equity firms are finding better deals south of the border”. While it was noted in that article that “neither said the situation has reached a critical stage yet,” the circumstances have changed significantly since the onset of the COVID-19 pandemic and other world events.

In the past several years, the global construction market has been faced with continued volatile market conditions making it difficult for contractors to secure firm quotes from their trades and ongoing supply chain and general labour shortage. These market conditions in a fixed price and fixed schedule environment as contemplated in lump sum design-build and P3 models have rendered these delivery models generally financially unsustainable for designers and contractors. It is clear from our interviews and research to date that except in rare instances, there is no longer any appetite in the market for lump sum design-builds or P3 projects.

The panelists at the ACEC in 2019 projected that “When big companies decide they are not going to play anymore it is an untenable situation... One of two things is going to happen. Either there won't be bidders for projects.. Or, in other cases, you are awarding contracts to consortia that can't deliver or you will see failures over time. It is a very worrisome scenario.” That statement made in 2019 has, unfortunately, turned into reality for many public sector owners as we see numerous public sector procurements get delayed due to lack of market interest or cancelled due to bidders withdrawing due to the selected delivery method and associated risk allocation or where the procurement does proceed, the projects are at greater risk of resulting in multi-million dollar claims and disputes, repeated delays and compromised quality, as seen with the Ottawa LRT Project.

## 4.3 Owner's Budget and Affordability Caps

Generally, there was concern expressed about the timing when the budget for public sector projects is established and presented to Council for approval and the subsequent use of this approved budget as the

“affordability cap” in procurement documents and communications to the public.

As expressed by one participant, the common problem is unreasonable affordability ceiling. They indicated that the owner's budget is often set several years before procurement. The consequence of this is that the actual cost of the project may be significantly higher than the approved budget. One participant pointed to steel prices “which have gone up 70% in a one-year period” as an example of the problem with establishing the project budget several years before the project is procured.

The other factor which can lead to a significant deviation between the project budget and the actual project cost is that project budgets are sometimes established at an early stage of design development or even prior to the owner's statement of requirements being fully developed. This can lead to project budgets being established based on only a portion of the owner's requirements, without consideration for costs to satisfy the requirements that are later developed.

There is a general recognition that public sector owners are motivated to obtain realistic and feasible project budgets so that the expectations of Council and the general public are properly managed, rather than having to go back to Council for approval to increase the budget or to communicate to the public that the project has increased in projected costs before it has even started.

To increase the likelihood of establishing realistic project budgets, public sector owners are encouraged to establish budgets only after a reasonably sufficient amount of information (e.g., design information) is available and to update those budgets just prior to the projects being tendered to the market.

## 4.4 Low Bid vs. Fair Bid

In general, the owner participants acknowledge that they are not looking for low bids at the expense of bankrupting the design and construction industry. There is a recognition that for infrastructure to be designed and built, these projects need to be financially sustainable to be attractive for the design and construction industry. There is a further recognition that the design and construction industry being profitable is good for the economy. Per the Canadian Construction Association, “Construction employs over 1.4 million people in Canada and generates about \$141 billion to the economy annually, accounting for 7.5 per cent of Canada's gross domestic product (GDP).”

<sup>11</sup> [acec.ca](http://acec.ca)

<sup>12</sup> [ACEC panellists warn of excess risks, insurance challenges in P3—constructconnect.com](https://www.constructconnect.com/news/acec-panellists-warn-of-excess-risks-insurance-challenges-in-p3-constructconnect.com)

As discussed previously in this report, there is also a general recognition that low bids can lead to unintended consequences, including disputes and claims that can drag on for years at the taxpayers' expense and more critically, compromised quality, durability and reliability of the infrastructure. As expressed by one contractor participant, *"it is hard to give a valuable service when you're just looking at low bid."*

Regardless of the delivery method, public sector owners are encouraged to adopt a best value procurement approach whereby non-cost factors, such as quality, experience and innovation, take priority and greater weight over the lowest cost. A recent trend for non-cost criteria is collaborative behavioural assessments to evaluate how the proponents will work together with the owner, as a team, to deal with problems and challenges.

## 4.5 Collaborative Working Relationships

Most participants commented that while the delivery method can have a significant influence on the outcome of a project, at the end of the day, it ultimately comes down to the people involved to make the project successful, regardless of the delivery model. One owner summarized the overall theme well when they emphasized the need for owners to consciously view projects as "collaborations" with the designer and the contractor. Another owner participant stated that they treat their designers and contractors as their clients. This mindset keeps the focus on the success of the project as a whole.

Some specific examples of what owners can do to foster a collaborative relationship with the designer and contractor, regardless of delivery method, include:

- The owner should actively engage in activities to help the designer and contractor, including providing support to remove barriers where possible, regardless whether the owner has responsibility for the activity. For example, permitting and coordination with 3rd party utilities are often the responsibility of the designer and/or the contractor; however, the public sector owner may itself be the permitting authority or have strong working relationships with the permitting authority or third-party utility owners. In these circumstances, the owner should be motivated, in the interest of the project, to be actively engaged in supporting the designer and/or contractor in advancing and expediting the approval process with the permitting authority and third-party utility owners, rather than approaching it with the mindset that the owner has paid the designer and/or contractor to get the approvals and it's not the owner's problem.
- Related to the above, where the owner has engaged a compliance team (e.g. Owner's Engineer), the owner should actively manage these parties to align their interests with those of the project and to ensure these parties are actively cooperating and collaborating with the owner, designer and contractor to achieve a successful project outcome. For example, several participants commented that owner compliance teams can become obstructionists to the timely progress of the project by "nitpicking" on every deliverable submitted by the designer and contractor, regardless of materiality. As one participant noted, rather than providing 1000 comments on minor issues, the owner's team should only raise comments on major issues. This same participant noted that owner's engineers have been paid a lot more than the engineers actually developing and completing the design. The problem is that the Owner's Engineer often feels they have a duty to "nitpick" everything to justify their role. This leads to unintended consequences of creating adversarial relationship among the Owner's Engineer and the designer and contractor as well as delaying project completion due to prolonged approval processes even though the compliance team's comments on the deliverables may be inconsequential. Without proper management of the owners' compliance teams, this can result in misaligned interests among the project participants, to the detriment of the project itself.
- The owner should be prepared to properly compensate the designer and contractor for services rendered without an unreasonably strict approach to "fixed price" or "upset limit" compensation. This requires a recognition that, except in rare circumstances, the public sector owner is generally procuring services to design and construct a customized project and is not simply buying an off-the-shelf widget. Circumstances may evolve on the project that cannot be reasonably anticipated by the designer or contractor. Even for simple projects, there may be variance from one project to another due to differences in market, site and weather conditions (e.g., significant inflation, supply chain issues, etc.) or the approach taken by the owner's project staff in administering and interpreting the contract requirements. Accordingly, owners should adopt a reasonable and timely approach to change orders and change order management. Success in this new reality requires a willingness to move away from reliance on "what has been done before" and a shift toward working together as a team achieve the best overall result for each specific project.

- The owner should allocate sufficient qualified and experienced project staff to the project and empower them with the necessary authority and reasonable flexibility to make timely decisions, to adapt to changing circumstances, and generally, to keep up with the project. This includes providing timely feedback on interpretation of design and construction criteria and prompt decisions and administration of change orders. This can be accomplished by delegating authority to the owner's project staff to make decisions within a certain dollar threshold and streamlining the approval process for matters beyond that dollar threshold so that approvals are provided in a timely manner so as not to disrupt project progress or unreasonably shift the burden onto the designer and contractor to "fund" the project.
- Project status reporting is important, but the frequency and level of detail must be scaled to the project value and complexity to ensure it is a valuable and effective use of time and resources. A blanket requirement to report on all major capital projects can run the risk of distracting the project staff from addressing critical issues and stakeholders overlooking important matters because of the volumes of reporting materials. Our experience is that by focusing the reporting on those projects that have the potential for significant risks and impacts (e.g., financial, reputational, otherwise), and not just dollar value, the collective stakeholders have a greater opportunity to focus their efforts in discussing and mitigating those risks and impacts.

Overall, regardless of the delivery model, collaboration is key, and owners can set the tone and stage for true collaboration with its designer and contractor. It is important for owners to recognize that they maintain significant influence over the outcome of their projects through their approach to the contract, project governance and interaction with the project participants. This is not to say that owners should stop enforcing their contracts, but only to advocate for a flexible and reasonable approach to the contract and overall relationship based on the evolving circumstances at the time of the project.

In this regard, based on our industry experience, organizations (particularly larger organizations) can be prone to having many administrative processes, some of which may overlap. Organizations can drive additional efficiencies by evaluating the necessity and suitability of, and streamlining, their processes from time to time. As such, we recommend that the City consider whether it is valuable to evaluate its current processes to determine whether there is any opportunity to streamline its administrative reporting and approvals processes, so that its project staff can spend their time overseeing the project instead of administering internal processes.

## 4.6 Project Governance

Related to the above topic is project governance. A balanced approach to project governance is also key to successful project planning and delivery as projects can be very dynamic. It is important that the owner's project staff be appropriately empowered to manage, adapt and respond to evolving circumstances in a timely manner at the project-level. By way of example:

- Project schedules are typically a priority and work by the service providers must continue. In these circumstances, service providers can find themselves in situations where they are directed by the owner's project staff to proceed with out-of-scope work, even though the formal change order is not yet processed. This can leave the service providers in the situation where they are "funding" the out-of-scope work for extended durations while they wait for the formalities to catch up with the project. Our experience is that an increasing number of public sector owners are recognizing the need to adapt their policies to empower their project staff to approve and close-out on change orders in a timely manner at the project-level. This keeps the project going and relationships healthy as the service providers are properly compensated in a timely manner.

## 4.7 Project Size

With the cost of materials continuing to mount and ongoing challenges with labour shortage and supply chain issues, these factors have resulted in construction costs being significantly more than what it was in pre-pandemic conditions. Current market conditions have resulted in project budgets being 40% or more than what it would have cost as compared to pre-pandemic conditions. This, along with the desire by certain public sector owners to centralize their services (e.g. social and water infrastructure projects), is resulting in multi-billion dollar projects being tendered to the market. The reality is that projects of this size severely limits the players who have the financials, credentials and resources to adequately pursue, let alone deliver, on these projects. Bonding capacity alone can limit available contractors to just a few.

To maximize market competition in current market conditions, we are seeing more owners take proactive steps to split up what otherwise would be mega-sized projects into multiple smaller projects, with the owner maintaining control over the interface among the different players.





#### 4.8 Contract Form

The design and construction participants advocated for greater use of industry developed form of agreements. Where bespoke contracts are necessitated because of project-specific considerations, their recommendation is for the owner's project staff to be "at the table" to explain why these terms are required so there can be an open dialogue as to what these clauses mean to both parties, e.g., would it lead the contractor to add contingency.

Many of the design and construction participants noted that non-industry form agreements, or industry form agreements that are heavily modified by supplementary conditions, create added costs for them to bid on projects (to a point where some will be deterred from bidding at all) and can create uncertainties or increased contingencies due to the lack of familiarity with the bespoke terms. These participants also advocated for public sector owners to engage with the design and construction industry on a more regular basis to discuss contract forms and underlying approach to risk allocation.

There was also consensus among design and construction participants that a recurring problem with most contracts is the long delays inherent in common contractual dispute resolution processes. It was recommended that regardless of the delivery method or contract form, there should be a dispute resolution board in place to ensure timely resolution of claims and disputes among the project stakeholders.

#### 4.9 Resources

Another recurring theme is the importance of the owner having the right resources to plan for and manage project delivery. This necessitates the right skillset and mindset. As discussed earlier in the report, the owner should be wary of seeing itself as a "contract administrator" only. Regardless of delivery method, the owner needs to take a proactive approach to cooperating with the designer and contractor, all in the interest of the project and ultimately the interest of the public. What this means is that owner staff need to have the requisite experience commensurate with the size and complexity of the project to ensure that they can provide appropriate oversight, direction and control over the project. This may require owners to proactively build capacity through training, recruitment and upscaling its resources.

#### 4.10 Communication to the Public

Most owner participants maintain a publicly accessible website where they provide an overview of and updates on their capital projects. As noted by the Commissioner in their public inquiry for the OLRT1 project, regular and transparency communication to the public about the status of the project is critical.



# 5. Conclusions & Recommendations

Considering both our review of the City’s project delivery method selection process and our analysis of current industry trends, our conclusions and recommendations are summarized below.

## 5.1 City of Edmonton’s Project Delivery Selection Process

The City’s project delivery method selection process offers flexibility so that the analysis and decision are driven by project-specific considerations. By avoiding a prescriptive approach, the City can readily adapt to changing market conditions, whether it be changing delivery models during the planning process or adapting an existing delivery method to suit its needs. As such, this enables Project Managers to find the right model based on the characteristics of the project and the best information available at the time. Our assessment is that the City’s approach to project delivery method selection is consistent with current industry practices, in particular, the principle that there is no “one-size-fits-all” model that was endorsed by generally all participants in our market research.

In terms of next steps, the City may wish to consider increasing the dollar thresholds for:

- what constitutes a “major capital project”. In this regard, we recommend increasing it to at least \$100M to align with current market conditions; and
- projects that must go through initial P3 screening. In this regard, we recommend increasing the referenced benchmark it to at least \$500M to align with current market conditions.

Further, we recommend that the City continue to emphasize the importance of timely and appropriate record-keeping of their planning phase deliverables, including the project delivery method analysis. The level of detail can be scaled to the project size and complexity.

## 5.2 Industry Insights and Market Trends

The overarching theme from our research is that the relationship among the owner, designer and contractor is key. Regardless of the delivery method, if there is a culture of respect, collaboration and alignment, the project will have a higher probability of successful outcomes. Having said this, it is also recognized that an imbalanced risk transfer can be fatal to the ability to foster an environment of trust and collaboration because it becomes a zero-sum game, and it inherently forces the parties to act as adversaries.

The fundamental takeaways are that:

- There is no “one-size-fits-all.” The project delivery method selection process needs to consider all options at the initial stage, with an objective set of cost and non-cost criteria to evaluate the project-specific circumstances to arrive at the delivery method;
- Low-bid price upfront does not mean low-price at the end of the project and it can result in lasting unintended consequences, such as compromised quality. Award criteria should necessarily consider non-cost factors;
- Collaboration is key and the owner is in the driver seat to make this happen. This starts with the owner’s decision to adopt a fair and balanced approach to risk allocation and is dependent on the owner applying a fair and balanced approach to implementation and enforcement of the contract;

Ultimately, as observed by one owner participant, owners must be prepared to change and adapt to evolving market conditions. This includes routine and proactive education and engagement with industry stakeholders to understand what those market conditions are and what the market is willing to accept. In this regard, we recommend that the City consider taking steps to share the findings of this report with City staff and decision-makers who are involved in the planning and delivery of capital projects. We also recommend that the City continue to proactively engage with design and construction industry associations.

# Appendix A—City of Edmonton Major Capital Projects—List of Projects Interviewed

<b>Project</b>	<b>Project Delivery Method</b>	<b>Total Capital Value*</b>
Coronation Recreation Centre	Construction Consultant—General Contractor	\$153,410,000
Edmonton Strathcona County Pedestrian Bridge	Construction Consultant—General Contractor	\$38,580,000
EXPO Rehabilitation Project	Integrated Project Delivery	\$98,349,000
William Hawrelak Park	Construction Manager at Risk	\$134,591,000
Lewis Farms Recreation Centre	Construction Manager at Risk	\$310,637,000
LRT Capital Line South	Design-Build	\$1,100,040,417
LRT Metro Line NW Phase 1	Construction Manager at Risk	\$291,116,000
LRT Valley Line West	Public-Private Partnership	\$2,607,677,645
Southeast Soccer Centre	Construction Manager at Risk	\$30,100,000
Strathcona Neighborhood Renewal	Design-Bid-Build	\$49,728,214
Terwillegar Drive Expressway	Construction Consultant -General Contractor	\$26,335,441
Yellowhead Trail Projects—Mainline and Fort Road	Construction Manager at Risk	\$701,126,000

\* values are based on the information provided to Stantec at the time of preparation of this report.

# Appendix B—City of Edmonton Major Capital Projects Interview Questions

## A.1 Design Team

### Background

This interview is in support of the City of Edmonton’s Major Capital Project Review, specifically the assessment of Project Delivery method selection and the underlying criteria (e.g. risk management/ transference, governance and oversight requirements, project design and functionality, and cost and schedule drivers).

The primary focus of these discussions is on the process, selection criteria and observable trends for Project Delivery methods, without getting into any project-specific details or any matter that may be considered confidential.

Our goal is to learn about the City of Edmonton’s existing process. We are not evaluating the performance of any individual or the project itself. Your participation in this interview will not in any way reflect on your performance or employment with the City of Edmonton. We thank you in advance for your time.

### Interview Questions for Design Team

1. Can you describe your role on the Project?
2. At what stage of the project was it transitioned to you and when it was transitioned to the delivery team?
3. Which checkpoint(s) were you involved with and which procurement-related deliverables were developed during your involvement?
4. Was the delivery method analysis prepared and the delivery method selected during your involvement?
  - a. If so,
    - i. Can you describe what criteria was considered, which stakeholders were involved and the process by which the decision was made?
    - ii. How does this compare to other major capital projects that you’ve been involved with?
    - iii. Are you aware of prescribed criteria that is considered on all projects or are these developed on a project-by-project basis
  - b. If not, was the delivery method selected prior to your involvement? If so, was the criteria for that selection provided to you?
5. Was the procurement strategy developed during your involvement?
  - a. If so, can you describe what criteria was considered, which stakeholders were involved and the process by which the decision was made?
  - b. If not, was the procurement strategy determined prior to your involvement? If so, was the criteria for that selection provided to you?
6. Are there lessons learned shared between the design and delivery teams? If so, how does that factor into the process for delivery method and procurement strategy selection?

## A.2 Delivery Team

### Background

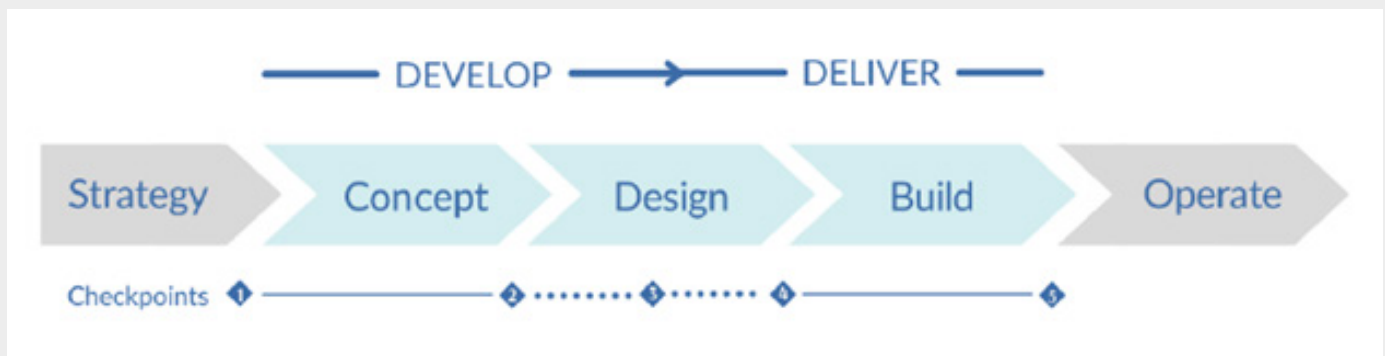
This interview is in support of the City of Edmonton's Major Capital Project Review, specifically the assessment of Project Delivery method selection and the underlying criteria (e.g. risk management/ transference, governance and oversight requirements, project design and functionality, and cost and schedule drivers).

The primary focus of these discussions is on the process, selection criteria and observable trends for Project Delivery methods, without getting into any project-specific details or any matter that may be considered confidential.

Our goal is to learn about the City of Edmonton's existing process. We are not evaluating the performance of any individual or the project itself. Your participation in this interview will not in any way reflect on your performance or employment with the City of Edmonton. We thank you in advance for your time.

### Interview Questions for Design Team

1. Can you describe your role on the Project?
2. At what stage of the project was it transitioned to you?
3. What involvement did you have during the design phase (with reference to the PDDM depicted below)?
4. Were the procurement deliverables from prior phases shared with you (specifically, delivery method justification, risk allocation/ transfer and risk register)?
5. Was the Project delivered on time / on budget based on the original contract price and schedule?
6. Without getting into specifics or details, is there a general observable trend for major category of issues on the project or other projects of same delivery method from your past experience? For example, frequent change orders, missed deadlines?
7. Do the dispute processes in the contract help or hinder resolution when issues arise?
8. Does the delivery model encourage a collaborative approach to risk and issue mitigation and resolution?
9. How much did the delivery method influence the outcome of the Project? Was this a positive or negative impact? Given what you know now, was that the right delivery model for this Project?
10. Were lessons learned developed for the Project? If so, how are these shared with the teams deciding on delivery method and procurement strategy?



# Appendix C—Market Sounding Participants

First Name	Last Name	Company	Title
Caroline	Andrewes	ACEC-BC	President and CEO
Jan	Pierzchajlo	Alberta Association of Architects	Principal Emeritus
Ken	Gibson	Alberta Construction Association	Executive Director
Bert	DeBruin	Alta Pro Electric	CEO, Business Development
Kevin	Pringle	Alternative Capital Partnerships	Executive Director
Joe	Schranz	Berkshire Hathaway Specialty Insurance	SVP
Trevor	Parker	Boxfish Infrastructure Group	Commercial Advisor
Michael	Thompson	City of Calgary	General Manager Infrastructure Services
Tammy	Rose	City of Ottawa	Infrastructure Services
Carina	Duclos	City of Ottawa	Infrastructure Services
Danny	Tooth	City of Winnipeg	Acting Manager, Major Projects Oversight
Lars-Erik	Larsen	Clark Builders	Manager, Project Development
Doug	McConnell	Consulting Architects of Alberta	Partner Emeritus
Ken	Kozakewich	Consulting Engineers of Alberta	CEO
Michael	Markowski	Consulting Engineers of Alberta	Director of Risk and Commercial Management
Ryan	Christensen	Delnor	Senior PM, Principal
David	Hatem	Donovan Hatem	Partner
David	Johnson	Edmonton Construction Association	President
Matt	Schellenberger	Edmonton Construction Association	Director of Corporate Development
Christopher	Lane	EllisDon	SVP
Tim	Philpotts	Ernst and Young (EY)	EY Canada Government & Public Sector Strategy and Transactions Market and Segment Leader
Noor	Esmail	Fraser Health Authority (FHA)	Chief Project Officer & Executive Director
Travis	Gilson	Graham	District Manager
Sarah	McGowan	Infrastructure Ontario (IO)	Director, Transaction Finance
Kujtim	Avdyllari	Infrastructure Ontario (IO)	Director, Project Delivery
Dan	Donoghue	Infrastructure Ontario (IO)	VP
John	Traianopoulos	Infrastructure Ontario (IO)	SVP
Valerie	Onderka	Ironshore	VP, Designers and Contractors Professional Liability
Darryl	Wiebe	Kerr Interior	President
Steve	Panciu	Marsh	SVP, National Engineering Practice Lead

<b>First Name</b>	<b>Last Name</b>	<b>Company</b>	<b>Title</b>
Mark	Ciavarro	Metrolinx	EVP, Subway Extensions Delivery
Tom	Aylward Nally	Metrolinx	Senior Manager and Advisor to the CPO
Shayne	Tryon	Metrolinx	VP, Capital Projects Commercial Management
Paul	Manhire	Metrolinx	EVP, Light Rail Delivery
Marcia	Medrano	Metrolinx	VP, Go Stations Capital Delivery
Gabriela	Sauter	Metrolinx	Programmatic Commercial Director, Subway Extensions
Jennifer	Graham Harkness	Ministry of Transportation Ontario (MTO)	Assistant Deputy Minister & Chief Engineer
Chris	Mealing	Mott MacDonald	Regional Strategy Leader—North America
Mike	Hoefler	NHA	CEO, Regional Director, Capital Planning and Support Services
Ben	Wagemakers	PCL	VP and General Manager
John	Singleton	Singleton Urquhart Reynolds	Counsel
Jeff	Busby	TransLink	VP, Engineering
Sarah	Lemon	TransLink	Director, Strategic Sourcing + Contract Management
Amanda	Farrell	Transportation Investment Corporation (TI Corp)	President and CEO
Ross	Ginsberg	Weinberg, Wheeler, Hudgins, Gunn & Dial	Partner



# Appendix D—Market Sounding Interview Questions

## A.3 Owners

### Introduction

1. Roundtable introduction
2. Purpose of Discussion

### Project Delivery Methods & Selection Process

3. Stantec has been retained by the City of Edmonton to review the project delivery method selection process for their major capital projects, which they define as anything over \$20M. What is considered a major project in your organization?
4. Can you describe, at a high-level, your process for project delivery method selection? Is there a different process depending on whether it is considered a major project?
5. Do you have preferred or default delivery methods? Is this influenced by project size, type, complexity, funding requirements or other factors?
6. Has your experience with lump sum design-build and P3 models been successful? What defines a “successful” project?
  - a. Are there identifiable challenges or risks associated with lump sum design-build and P3 models?
  - b. Are there identifiable advantages or benefits associated with lump sum design-build and P3 models that are routinely achieved?
7. Has there been a shift in the types of preferred or default delivery models in the last several years or do you foresee a shift in the near term? If so, what are the drivers for the change?
8. There is a recent trend towards progressive and/or collaborative delivery models to mitigate some of the challenges and problems considered to be associated with lump sum design-build and P3 models. What is your experience and/or interest with these “newer” models?

### Risks & Risk Allocation

9. How important is engagement of industry partners in delivery method selection and their input into risk allocation, scope definition and contract development before procurement? If it is a consideration, what is the process for soliciting that feedback?
10. Can you describe your approach to risk allocation?
11. What do you consider are the key risks and challenges during the procurement process and what is your strategy to mitigate?
12. What do you consider are the key risks and challenges during project delivery and what is your strategy to mitigate?

### Trends & Go-Forward

13. What do you see as the trend for project delivery method selection in the next 5-10 years?
14. What is the optimal level of Owner participation in the design, construction and maintenance phases?
15. What do you anticipate will be the main drivers for types of projects that will be implemented in the next 5-10 years?
16. How are you incorporating climate change into your projects?

## A.4 Industry Associations

### Introduction

1. Roundtable introduction
2. Purpose of Discussion

### Project Delivery Methods & Selection Process

3. Stantec has been retained by the City of Edmonton to review the project delivery method selection process for their major capital projects, which they define as anything over \$20M. Based on your experience, what do Owners typically consider as “major projects”?
4. Based on your observations, are there preferred or default delivery methods? Is this influenced by project size, type, complexity, funding requirements or other factors?
5. What are your observations as it relates to lump sum design-build and P3 models been successful? What defines a “successful” project?
  - a. Are there identifiable challenges or risks associated with lump sum design-build and P3 models?
  - b. Are there identifiable advantages or benefits associated with lump sum design-build and P3 models that are routinely achieved?
6. Has there been a shift in the types of preferred or default delivery models in the last several years or do you foresee a shift in the near term? If so, what are the drivers for the change?
7. There is a recent trend towards progressive and/or collaborative delivery models to mitigate some of the challenges and problems considered to be associated with lump sum design-build and P3 models. What is the market feedback on these “newer” models?

### Risks & Risk Allocation

8. Does your organization typically get engaged with Owners to discuss delivery method selection and provide input into risk allocation, scope definition and contract development before procurement?
9. What do you consider are the key risks and challenges during the procurement process and what mitigation strategies do you recommend?
10. What do you consider are the key risks and challenges during project delivery and what mitigation strategies do you recommend?

### Trends & Go-Forward

11. What do you see as the trend for project delivery method selection in the next 5-10 years?
12. What is the optimal level of Owner participation in the design, construction and maintenance phases?
13. What do you anticipate will be the main drivers for types of projects that will be implemented in the next 5-10 years?
14. How should climate change considerations be incorporated into projects?

## A.5 Lawyers, Insurers and Financial Advisors

### Introduction

1. Roundtable introduction
2. Purpose of Discussion

### Project Delivery Methods & Selection Process

3. Based on your observations, do Owners have preferred or default delivery methods? Is this influenced by project size, type, complexity, funding requirements or other factors?
4. What are your observations about lump sum design-build and P3 models? Have they been successful? What defines a “successful” project?
  - a. Are there identifiable challenges or risks associated with lump sum design-build and P3 models?
  - b. Are there identifiable advantages or benefits associated with lump sum design-build and P3 models that are routinely achieved?
5. Has there been a shift in the types of preferred or default delivery models in the last several years? Do you foresee a shift in the near term? If so, what are the drivers for the change?
6. There is a recent trend towards progressive and/or collaborative delivery models to mitigate some of the challenges and problems considered to be associated with lump sum design-build and P3 models. What general feedback do you hear on these “newer” models? Do you think the insurance market is more receptive to these models?

### Risks & Risk Allocation

7. What do you consider are the key risks and challenges during the procurement process? What mitigation strategies do you recommend?
8. What do you consider are the key risks and challenges during project delivery? What mitigation strategies do you recommend?

### Trends & Go-Forward

9. What do you see as the trend for premiums for PSPL going forward? Is there a difference in pricing depending on the delivery method?
10. What do you see as the trend for project delivery method selection in the next 5-10 years?
11. What is the optimal level of Owner participation in the design, construction and maintenance phases?
12. What do you anticipate will be the main drivers for types of projects that will be implemented in the next 5-10 years?
13. How should climate change considerations be incorporated into projects?

# Appendix E—Objective Criteria for Evaluating Procurement Models for Future Projects<sup>13</sup>

As noted, no single procurement approach is best suited for all infrastructure projects. However, it is helpful to develop a set of objective criteria for evaluating procurement models for future projects. Such criteria could include the following:

- *The model's comparative value from the perspectives of quality, cost, and schedule as compared with other procurement approaches.* Such analysis should not be conducted in a vacuum, but should account for the project's circumstances, including its complexity, the public procurer's experience with the infrastructure, and whether the infrastructure is static or dynamic.
- *Whether the model properly aligns the interests of the parties involved, and whether project risks are managed by the parties best positioned to handle them.* As part of that analysis, public agencies should consider the commercial terms built into the model, such as pay-for-performance mechanisms, risk-sharing protocols, and teaming approaches that could include the public procurer.
- *What levers the procurement model contains.* The options should be considered for what can enforce the contractual terms on each party if poor performance or disputes arise.
- *The measures in place to ensure public transparency, accountability, and oversight of major infrastructure projects.* This criterion requires finding an appropriate balance between authority delegated to professional staff to make operational decisions without political interference and appropriate political oversight and accountability for strategic decisions and outcomes.
- *The degree of control the government authority should retain, given the project's circumstances and the public authority's experience.* Thought should be given to crafting the appropriate contractual terms that give the public agency options in the event of poor performance.
- *Flexibility to extend or alter.* In the chosen procurement model, does the government maintain sufficient flexibility to extend or alter the system to respond to changing circumstances and public needs over the project's life without facing major contract change fees?
- *The public interest prioritized.* Does the procurement model foster a culture of safety, enable meaningful community benefits, and prioritize public service?

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<sup>13</sup> [http://www.archives.gov.on.ca/en/e\\_records/OLRTPI/documents/final-report/index.html](http://www.archives.gov.on.ca/en/e_records/OLRTPI/documents/final-report/index.html)

Please note: The entire Appendix E is a direct excerpt from the Ottawa Light Rail Transit Public Inquiry—Final Report



Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always design with community in mind.

We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise, to appreciate nuances and envision what's never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at [stantec.com](http://stantec.com) or find us on social media.